AN INSTRUMENT FOR MEASURING TOTAL QUALITY MANAGEMENT PRACTICES IN HIGHER EDUCATION – THE DEVELOPMENT OF COMPREHENSIVE TQM PRACTICES MEASUREMENT

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ABSTRACT

As the business world becomes more and more competitive, quality has become a must for every marketable product or service. Therefore, every company has to focus their attention on striving for excellent quality. Over the past few decades, industries have come to understand that in order to stay competitive globally, a self-assessment to continuously improve organizational performance is required. In this context, Total Quality Management (TQM) has been accepted as a disciplined management process in industry in order to cope with the changes in marketplace and to focus on quality in both their products as well as their services. Most researchers agreed that TQM has its roots established predominantly in industry, but there has been a strong push for adopting TQM in educational organizations. Many researchers feel that the principles of TQM can definitely contribute to the improvement of higher education. This paper aims to provide a TQM framework that emphasis on continuous improvements for quality measurement in higher education. Following a theoretical study of the dimensions of quality management in this environment, the paper reports on the literature research carried out from the past study. TQM philosophies and the comparative analysis of TQM adoption in industry versus higher education provide the theoretical and practical background for this work. The analysis of TQM in higher education was done considering various critical factors such as existing educational practices and the barriers of TQM. A customer-oriented strategy for measurement was selected on the basis of customers' perceptions on quality dimensions, their importance ratings and their overall evaluation of the service provider. This paper proposed seven instruments can be used as self-assessment of the higher education institutions. They are leadership and top management commitment; policy and strategy; customer focus; measurement, analysis, and knowledge management; human resource management; process and system management; and benchmarking and partnership.

Keywords: Total Quality Management, Higher Education, Measurement

INTRODUCTION

Quality is on everyone's lips today because it can make the difference between success and failure in the existing competitive world. Today, quality means more than product reliability; it means a Total Quality effort in which every individual and every organization participates. Quality is the key to survival in most major businesses in the world and quality improvement has been recognized by many firms as a strategy to compete (Fotopoulos and Psomas, 2009; Abdullah, *et al.*, 2008; Calvo-Mora, *et al.*, 2006). The urge for quality comes from two sources, that is, the ever-changing needs and expectations of customers, and the competitive forces.

Quality is the output of business processes. To achieve quality and be competitive in today's environment requires Total Quality Management (TQM) concepts and methodology (Calvo-Mora, *et al.*, 2006). As the business world becomes more and more competitive, quality has become a must for every marketable product or service. Therefore, every company has to focus their attention on striving for excellent quality. Moreover, they have to realise that this is the only way to put themselves ahead of their competitor or at

least to equip them with an ability to compete with others. They have to accept that without quality they cannot even survive and definitely will be left behind.

In any competitive economy, continuous cost reduction and quality improvement are essential for an organisation to stay in operation. Competitiveness is measured by 3 things: Quality, Price and Delivery. The theory behind the costs of quality shows that, as Quality improves, costs fall through reduction in failure and appraisal costs. Satisfying the customer in terms of Quality and Price will clearly benefit market share. The absence of quality problems also remove the need for the "hidden operations" devoted to dealing with failure and waste, and delivery performance benefits from increased output and higher productivity.

We cannot avoid seeing how quality has developed into the most important competitive weapon and many organisations have realised that TQM is the new way of managing for the future. TQM is far wider in its application than assuring product or service quality - it is a way of managing the whole business or organisation to ensure complete customer satisfaction at every stage, internally and externally.

Among the issues address by previous researchers on implementation on TQM in higher education are concerns about assessment, accreditation, ratings and rankings are gaining tremendous attention from the government, planners and policy makers. This is impacting educational institutions and they are all forced to improve outcomes, become more efficient, effective and customer-centric, so as to be able to gain a competitive edge (Sahney *et al.*, 2008).

This paper aims to provide a TQM framework that emphasis on continuous improvements for quality measurement in higher education. Following a theoretical study of the dimensions of quality management in this environment, the paper reports on the literature research carried out from the past study. TQM philosophies and the comparative analysis of TQM adoption in industry versus higher education provide the theoretical and practical background for this work.

QUALITY AT GLANCE

A small group of American quality experts or gurus has been advising industries throughout the world and how they should manage quality. Many of the gurus appear to present different solutions to the problems of quality management and control. In reality they are talking the same "language" but they use different "dialects". Hence it may be useful to consider their approaches, similarities and differences (Table 1). The most notable are Philip B. Crosby (1987), W. Edwards Deming (1991), and Joseph M. Juran (1982). One thing they have in common is they recognize that there are no short-cuts to quality, no quick fixes, and that improvement requires full commitment and support from the top, extensive training and participation of all employees.

Based on a thorough literature review by Garvin (1988) in Lagrosen, *et al.*, (2004), has classified the definitions of quality into five major groups:

(1) ***Transcendent definitions****. These definitions are subjective and personal. They are eternal but go beyond measurement and logical description. They are related to concepts such as beauty and love.*

(2) ***Product-based definitions****. Quality is seen as a measurable variable. The bases for measurement are objective attributes of the product.*

(3) ***User-based definitions****. Quality is a means for customer satisfaction. This makes these definitions individual and partly subjective.*

(4) ***Manufacturing-based definitions****. Quality is seen as conformance to requirements and specifications.*

(5) ***Value-based definitions***. *These definitions define quality in relation to costs. Quality is seen as providing good value for costs.*

Table 1: The Quality Gurus Compared

	Crosby	**Deming**	**Juran**
Definition of quality	Conformance to requirement	A predictable degree of uniformity and dependability at low cost and suited to the market	Fitness for use
Degree of senior management responsibility	Responsible for quality	Responsible for 94% of quality problems	Less than 20% of quality problems are due to workers
Performance standard/motivation	Zero defects	Quality has many 'scales'; use statistics to measure performance in all areas; critical of zero defects	Avoid campaign to 'do perfect work'
General approach	Prevention, not inspection	Reduce variability by continuous improvement, cease mass inspection	General management approach to quality especially 'human elements'
Structure	14 steps to quality improvement	14 points for management	10 steps to quality improvement
Statistical Process Control (SPC)	Reject statistically acceptable level of quality	Statistically method of quality control must be used	Recommends SPC but warns that it can lead to 'tool-driven' approach

OVERVIEW OF TQM

There are many definitions of TQM. Toremen, et al., (2009) defines TQM as a management process and a set of disciplines that are co-ordinated to ensure that the organization consistently meets and exceeds customer requirements. TQM engages all divisions, departments and levels of the organization. Senior management organizes all of its strategy and operations around customer needs and develops a culture with high employee participation. While Venkatraman, (2007), describes TQM in two main notions - continuous improvement and the tools and techniques/methods used. In general, TQM encompasses many management and business philosophies and its focus gets shifted based on the scenario where TQM is applied. Whether it is in industry or higher education, TQM philosophy revolves around the customer.

TQM IN HIGHER EDUCATION

The level of awareness of TQM has increased considerably over the past few years. There have been many discussions on the subject of TQM in education and consider as a priority issue today for research and analysis. A number of studies are being conducted with a view to understanding the very conceptualization, assessment and measurement of quality in education. Although TQM has its roots established predominantly in industry, there has been a strong push for adopting TQM in educational organisations (Toremen, *et. al.*, 2009; Venkatraman, 2007; Owlia and Aspinwall, 1998; Srikanthan and Dalrymple, 2004). Many researchers (Calvo-Mora, *et al.*, 2006; Sirvanci, 2004;) feel that the principles of TQM can definitely contribute to the improvement of higher education, in particular towards curriculum reform.

In addition, a review of literatures on TQM experiences in universities and higher education institutions also indicate that a strong positive relationship between the implementation of TQM practices and organization performance, student performance (Mehra dan Rhee, 2009; Calco-Mora, 2006; Sakthivel, *et al*., 2005). It also can be implemented in higher education to improve student potential and curriculums reform (Toremen, *et al*., 2009; Venkatraman, 2007; Badri, *et al*., 2006; Calvo-Mora, *et al.*, 2006; Sirvanci, 2004; Michael, Sower, Motwani, 1997).

Most of the past studies are related to the managing and administrative tasks (Sahney, Banwet, Karunes, 2008; Badri, Selim, Alshare, Grandon, Younis, Abdulla, 2006; Sakthivel, and Raju, 2006; Robson, Yarrow, and Owen, 2005; Osseo-Asare, Longbottom, and Murphy, 2005; de Guzman, and Torres, 2004; Osseo-Asare and Longbottom, 2002; Aly and Akpovi, 2001; McAdam and Welsh, 2000; Kanji, Tambi and Wallace, 1999; Kanji and Tambi, 1999; Winn and Cameron, 1998; Elmuti et al., 1996; Zink and Schmidt, 1995; Ho and Wearn, 1995), followed by teaching and learning (Mehra, and Rhee, 2009; Calvo-Mora et al., 2006; Owlia and Aspinwall, 1998; Owlia and Aspinwall, 1996; Zairi, 1995).

There are three main focus in defining TQM in higher education; (1) customer satisfaction (Sahney *et al.*, 2008; Venkatraman, 2007) – view quality as transformation of internal process; (2) process orientation; and (3) continuous improvement.

INSTRUMENT COMPARISON

Based on literature, Table 2 and Table 3 show the quality management practices in manufacturing, services and higher education based on studies which have analyzed the quality measurement instruments. These instruments generated from the key factors for successful quality management implementation. According to Abdullah, *et al.*, (2008), these factors have been provided by contributions from quality leaders, formal evaluation models and measurement studies.

Most of these authors show some common issues which can be considered as critical for successful continuous quality improvement efforts. According to these studies, the most commonly used in literature on quality management are the following: top management leadership; strategic planning; customer focus; measurement, analysis and knowledge management; employee involvement; people management; education and training; human resource management; process management; supplier management; impact on society; and results/business results.

According to Venkatraman (2007); and Srikanthan and Dalrymple (2002), comparison made by many researchers between the industry and education, have pointed out that although industry and education differ from business process perspectives, some of their outcomes such as focussing on building flexibility and improving customer base in a dynamic environment are very much similar. While Stensaasen (cited in Venkatraman, 2007) mentioned that educational institutions can be considered as industries. Where the institutions provide education as the service with raw materials as incoming students on whom the processes of teaching and learning are applied and turned out as the finished products of graduates.

In general there is no different on general dimensions of TQM practices in manufacturing, services and higher education (Table 2 and Table 3). The different basically on the term used and modification of dimension made to suit that particular industry or organisation. For instance, some organisation used the term “Leadership”, while other organisation used “Management Commitment”. Although they are using the different term, but they are actually talking about the same thing. Another example is “Human Resource Management” and “Staff Focus”, also focusing on the same thing although different term used. Other different on dimensions of TQM practices is on specific area used by manufacturing, services and

higher education. Some organisation tailored the dimensions to suit their nature of businesses. For instance, dimension used in education is course delivery, while in manufacturing and services are product delivery and service delivery.

Table 2: Quality management practices according to measurement instruments in manufacturing and services.

Study	Quality management measures
Fotopoulos, and Psomas (2009)	Top management commitment; Strategic quality planning; Employee involvement; Supplier management; Customer focus; Process orientation; Continuous improvement; Facts-based decision making; and Human resource development.
Das, Paul, and Swierczek, (2008)	Top management commitment; Supplier quality management; Continuous quality improvement; Product innovation; Benchmarking; Employee involvement; Reward and recognition; Education and training; Customer focus; and Product quality.
Jayamaha, Grigg, and Mann (2008)	Senior leadership; Governance and social responsibilities; Strategy development; Strategy deployment; Customer and market knowledge; Customer relationships and satisfaction; Measurement and analysis of organizational performance; Information and knowledge management; Work systems; Employee learning and motivation; Employee wellbeing and satisfaction; Value creation processes; Support processes; Customer-focused results; Product and service results; Financial and market results; Human resource results; Organizational effectiveness results; and Governance and social responsibility results.
Ooi, Abu Bakar, Arumugam, Vellapan and Loke, (2007)	Reward and recognition; Customer focus; Organizational culture; Organizational trust; and Teamwork.
Miyagawa, and Yoshida, (2005)	Leadership; Information; Strategy; Human resource; Quality assurance; Supplier quality; Quality and operational results; Customer focus and satisfaction; and General matters.
Baidoun, (2003)	Leadership and top management commitment; People management; Middle management involvement; Training and education; Rewards and recognition; Teamwork; Quality policy and strategy; Communicating for quality; Supplier management; Accredited QMS; Organizing for quality; Managing by processes; Benchmarking; Self-assessment; Cost of quality; Quality control techniques; and Measuring customer wants and satisfaction.
Antony, Leung, Knowles, and Gosh, (2002)	Top management leadership; Role of the quality department; Training Product design; Supplier quality management; Process management; Quality data reporting; Employee relations; Customer satisfaction orientation; Communication to improve quality; and Continuous improvement.
Lau, and Idris, (2001)	Culture; Trust; Teamwork; Employment continuity; Education and training; Top management leadership for quality and continuous improvement; Employee involvement; and Customer satisfaction/ involvement.
Tsang, and Antony, (2001)	Customer focus; Continuous improvement; Teamwork and involvement; Top management commitment and recognition; Training and development; Quality systems and policies; Supervisory leadership; Communication within the company; Supplier partnership supplier management; Measurement and feedback; and Cultural change.
Mann, and Voss, (2000)	Leadership; Strategic planning; Customer and market focus; Information and analysis; Human resource focus; Process management; and Organisational results

Zhang, Waszink, and Wijngaard, (2000)	Leadership; Supplier quality management; Vision and plan statement; Evaluation; Process control and improvement; Product design; Quality system improvement; Employee participation; Recognition and reward; Education and training; and Customer focus.
Salaheldin, (2009)	Leadership; Organisational culture; Top management support; Continuous improvement; Benchmarking; Quality goals and policy; Team building and problem solving; Employee empowerment; Employee involvement; Employee training; Use of information technology; Supplier quality; Supplier relationships; Assessment of performance of suppliers; Product and service design; Enterprise performance metrics for TQM; Process control; Customer orientation; Management of customer relationships; Resources value addition process; Realistic TQM implementation schedule; Customer and market knowledge; Resources conservation and utilization; and Inspection and checking work.
Abdullah, Jegak Uli and Tarı´, (2008)	Management commitment; Customer focus; Employee involvement; Training and education; Reward and recognition; and Supplier relationship.
Arumugam, Ooi, Fong, (2008)	Leadership; Process management; Information analysis; Customer focus; Supplier relationship; Quality system improvement; Continual improvement; and People involvement.
Demirbag, Tatoglu, Tekinkus, Zaim, (2006)	Quality data and reporting; Role of top management; Employee relations; Supplier quality management; Training; Quality policy; and Process management.
Conca, *et al.*, (2004)*	Leadership; Quality planning; Employee management; Supplier management; Customer focus; Process management; Continuous improvement; and Learning.
Fco. Javier Llore´ns Montes, Antonio Verdu´ Jover and Luis Miguel Molina Ferna´ndez (2003)	Managerial leadership and commitment; Human resources management; The relationship with customers and suppliers; The internal culture of the organization; and The process management.
Sohail, and Hoong, (2003)	Employee training and development; Process management; Quality measurement and benchmarking; Top management commitment; Customer involvement and satisfaction; and Strategy and planning.
Brah, Tee, Rao, (2002)	Corporate planning; Role of top management leadership; Customer focus; Human resource focus; Process focus; Quality focus; and Information and analysis.
Sharma, and Gadenne, (2002)	Increasing organization's personal contacts with customer; Increased employee interaction with customers and suppliers; Increased employee involvement in design and planning; Increased employee autonomy in decision making; Top executives actively championing our quality program; Employee training in quality principles; Use of statistics methods to measure and monitor quality; Use of charts and graphs to measure and monitor quality; Employee training in statistical methods for measuring quality; Management training in quality principles; Use of empowered (responsible) teams; Measurement of quality performance in all areas; A plan to reduce rework drastically; A plan to reduce order-processing cycle time; Program to reduce overall product/ service delivery cycle time; A program to reduce product/service development cycle time; A more active employee suggestion system; Requiring suppliers to adopt a quality program; Requiring suppliers to meet stricter quality specifications; Executives communicating quality commitment to employees; A top executive decision to commit fully to a quality program; Actively seeking customer inputs to determine requirements; Frequent use of cross-departmental teams; Using customer requirements as the basis for quality; Quality principles included in our mission statement; Employee training in teamwork; Less bureaucracy; A program to reduce paper work; A more

	open, trusting organizational culture; Employee training in problem solving skills; An overall theme based on our quality program; A program to continuous reduction in defects; A program to find wasted time and cost in all internal processes; and An announced goal of zero-defects.
Barad, and Raz, (2000)	Management commitment; Internal quality information usage; Benchmarking; Design QM; Employee empowerment; Employee involvement; Employee training; Supplier QM; Supplier performance; SPC usage; Customer focus; and Product quality.
Anderson, and Sohal, (1999)	Leadership; Strategy, Policy and planning; Information and analysis; People; Customer focus; and Quality of process, product & services.
Rao, *et al*., (1999)*	Top management support; Strategic quality planning; Quality information availability; Quality information usage; Employee training; Employee involvement; Product/process design; Supplier quality; Customer orientation; Quality citizenship; and Benchmarking.
Grandzol and Gershon (1998)*	Leadership; Continuous improvement; Employee fulfilment; Learning; Process management; Internal/external cooperation; and Customer focus.
Quazi and Padibjo (1998)*	Leadership; Information and analysis; Strategic planning; Human resource utilisation; Management of process quality; Quality results; and Customer satisfaction.
Quazi et al. (1998)*	Taken from Saraph et al. (1989)
Ahire et al. (1996)*	Top management commitment; Customer focus; Supplier quality management; Design quality management; Benchmarking; Statistical process control usage; Internal quality information usage; Employee empowerment; Employee involvement; Employee training; Product quality; and Supplier performance.
Black and Porter (1995, 1996)*	Taken from Saraph et al. (1989)
Black and Porter (1995, 1996)*	Corporate quality culture; Strategic quality management; Quality improvement measurement system; People and customer management; Operational quality planning; External interface management; Supplier partnerships; Teamwork structures; Customer satisfaction orientation; and Communication of improvement information.
Flynn et al. (1994)*	Top management support (quality leadership, quality improvement rewards); Quality information (process control, feedback); Process management (cleanliness and organization); Product design (new product quality, interfunctional design process); Workforce management (selection for teamwork potential, teamwork); Supplier involvement (supplier relationship); and Customer involvement (customer interaction)
Saraph, *et al.*, (1989)*	Role of divisional top management and quality policy; Role of the quality department; Training; Product/service design; Supplier quality management Process management; Quality data and reporting; and Employee relationships.

*Note: * Source: Abdullah, Jegak Uli and Tarı´, (2008)*

Table 3: Quality management practices according to measurement instruments in higher education.

Study	Quality management measures
Mehra, and Rhee, (2009)	Student empowerment; Creation of teamwork environment; Team self-management; and Self-confidence and teammate trust.
Sahney, Banwet, Karunes, (2008)	Emphasis on continuous improvement; Differentiation; Customer focus; Budget priorities; Well-defined channels of communication; Effective and

	efficient leadership; Clear and specific policies and procedures; Instructional competence; Management-by-fact/information system; and Strategic and operational planning.
Ahmad Jusoh (2008)	Leadership; Strategic planning; Customer focus; Data and information management; Human resource management; Process and system management; and Strategic partnership and resources.
Badri, Selim, Alshare, Grandon, Younis, Abdulla, (2006)	Leadership; Strategic development; Student, stakeholder, and market focus; Measurement, analysis, and knowledge management; Faculty and staff focus; Process management; and Organizational performance results.
Sakthivel, and Raju, (2006)	Commitment of top management and leadership; Customer focus; Course delivery; Communication; Campus facilities; Congenial learning environment; and Continuous assessment and improvement.
Calvo-Mora, Leal, and Rolda´n, (2006)	Leadership; Policy and strategy; People management; Partnerships and resources; and Process management.
Lim and Tan (2005)	Total commitment to quality; Quality planning; Customer oriented; Staff involvement; Training and development; Management by fact; Continuous improvement; Process and prevention focus; and Reward and recognition.
Robson, Yarrow, and Owen, (2005)	Leadership; Service processes; People; Performance management and Results
Osseo-Asare, Longbottom, and Murphy, (2005)	Leadership; Vision, mission, and values of individual institutions; Policy and strategy; Stakeholder needs and expectations; Data, information, intelligence and knowledge management; Staff empowerment and support; Processes management; and Internal and external communication infrastructure.
Sakthivel, Rajendran, and Raju (2005)	Commitment of top management; Course delivery; Campus facilities; Courtesy; Customer feedback and improvement.
Guzman, and Torres, (2004)	Vision; Involvement; Continuous improvement; Training and education; Ownership; Rewards and recognition; Yearning for success; and Customer focus.
Osseo-Asare Jr, and Longbottom, (2002)	Leadership; Policy and strategy; People management; Resources and partnership; Processes; Customer satisfaction; People satisfaction; Impact on society; and Key performance results.
Kanji and Tambi, (1999)	Leadership; Delight the customer; Management by fact; People-based management; Continuous improvement; Customer satisfaction and internal customers; All work is process and measurement; Teamwork and people make quality; Continuous improvement cycle; and Prevention.
Kanji, Tambi, and Wallace, (1999)	Leadership; External customers satisfaction; Internal customers satisfaction; People-based management; Teamwork; Prevention; Process improvement; Resource measurement; and Continuous improvement.
Owlia, and Aspinwall, (1998)	Academic Resources; Competence; Attitude; and Content.
Win, and Cameron, (1998)	Quality leadership; Quality information and analysis; Strategic quality planning; Human resource development and management; Management of process quality; Quality and operational results; and Customer focus and satisfaction.
Owlia, and Aspinwall, (1997)	Top management commitment; Strategic planning; Organization for quality; Employee involvement and team working; Training for quality; Design management; Process management; Supplier quality management; Information and analysis; and Customer focus and satisfaction.

Elmuti, Kathawala, and Manippallil, (1996)	Commitment to TQM process; Clear mission and goals; Customer focus; Responsiveness and assurance; Courtesy and reliability; Continuous improvement; Unified goals; Team building; Empowerment Assessment; Supportive leadership/involvement; Supportive structure/culture; Extensive education/training; Extensive communication; Reward/recognition tie to performance; and Employee participation in problem solving and decision making.

DEVELOPING TQM MEASUREMENT INSTRUMENT IN HIGHER EDUCATION

Among the researchers, there is a consensus that TQM is a way of managing an organisation to improve its overall effectiveness and performance. There is less agreement as to what the primary constructs of TQM are, or what the overall concept of TQM is. No uniform view of TQM exists today. So far, TQM has come to mean different things to different people (Zhang, *et al*., 2000).

TQM constructs in education discussed in the literature vary from author to author, although there are common themes formed by the following requirements: leadership; policy and strategy; customer focus; measurement, analysis & knowledge management; people management; and process and system management (Ahmad Jusoh, 2008; Badri, et al., 2006; Calvo-Mora, et al., 2006; Osseo-Asare, et al., 2005; Robson, et al., 2005; Baidoun, 2003; Osseo-Asare and Longbottom, 2002). Through a prescriptive conceptual, empirical and practitioner literature review we have identified the following seven TQM implementation constructs:

1. Leadership and top management commitment
2. Strategic planning
3. Customer focus
4. Measurement, analysis, and knowledge management
5. Human resource management
6. Process and system management
7. Benchmarking and partnership

The roles of the seven core elements of a TQM framework are described below:

1. Leadership and top management commitment.

   The TQM literature portrays the visibility and support of top management as one of the major determinants for successful TQM implementation Sirvanci, (2004). According to Calvo-Mora, et al., (2006), the implementation of any quality improvement initiative, it is necessary to have the leadership and commitment of the senior management of the centres. They must create and disseminate the values of this management philosophy, set goals and objectives that are consistent with these values, and create an appropriate organization and system to achieve them. Lack of commitment may affect effectiveness and efficiency of universities or any of their sub-systems. Osseo-Asare, et al., (2005) also highlighted in his study that leadership is a key factor in the success of the TQM implementation in higher education institutions.

   In this category, the leadership element should examine senior management's personal leadership and involvement in creating and sustaining a customer focus, set and communicate the institution's vision, values, clear goals, high expectations and a leadership system that would promote performance excellence. It should also examine leadership system and policies internally that would impact staff and students and public responsibilities, establishing partnerships with industry, parents, and general community externally. Improvements in leadership effectiveness could be achieved through a participative management style that includes inputs from a comprehensive 360-degree feedback system from these internal and external stakeholders. The

strategic planning of this element would examine how the institution sets strategic directions and how it determines key plan requirements with a primary focus on customer satisfaction.

2. Strategic Planning.

The strategic planning category examines how your organization develops strategic objectives and action plans. Also examined are how your chosen strategic objectives and action plans are deployed and changed if circumstances require, and how progress is measured (2009-2010 BNQP: Education Criteria for Performance Excellence).

In higher education, the category stresses that learning centered education and operational performance are key strategic issues that need to be integral parts of the organization's overall planning (Badri, *et al.*, 2006).

This category stresses that long-term higher education institutional sustainability and competitive environment are the key strategic issues that need to be integral parts of the higher education institution's overall planning. The category examines how the institution sets strategic directions and develops strategic objectives to guide and strengthen the performance of the entire institution. This category also examines how the institution converts the strategic objectives into action plans and how the institution deploys the whole set of strategic objectives and action plans to all levels of the institution.

3. Customer focus.

A close relationship with the customers is necessary to fully determine their requirements and for acquiring feedback on the extent to which those requirements are being met. Customer focus is probably the most important (Zaini and Rushami, 2004), as reflected by the weight assigned to it by various quality award criteria (Sirvanci, 2004) and the ultimate measure of organizational performance. Customer involvement is necessary in the product design and development process (Das, *et al.*, 2008). In order to improve customer satisfaction, customer complaints should therefore be treated with top priority. For higher education, this dimension refers to student, stakeholder satisfaction and market focus (Badri, et al., 2006).

This category should examine how the institution determines the requirements, needs, expectations and preferences of students, stakeholders and market focus. It would include determining different performance measures and how the targets could be achieved. Some of the performance measures could be based on student satisfaction surveys, student forums and dialogue sessions, industry needs and satisfaction surveys and evaluation of teaching and learning effectiveness. This category also examines how the higher education institution builds relationships with students and stakeholders and determines the key factors that attract students and lead to student and stakeholder satisfaction.

4. Measurement, analysis, and knowledge management.

TQM studies are based on the practices containing empirical data and statistical analysis. Gathering data and analysis is an important element and should not separate from the TQM implementation (Toreman, et al., 2009). Key results indicators, both internal and external are necessary to measure as well as the result from benchmarking or customer surveys. This will assist the organization to know the market and to better understand the customer needs and expectations (Joanna and Antony, 2001).

In this category, the information management element should examine the management and effectiveness of the use of data and information to support overall mission-related performance excellence. It should ensure reliability and accessibility of the necessary key information required for day-to-day operational management. It would also focus on making analysis of facts and information and respond to situations in a fast and effective manner. This category also should examine the management and effectiveness of knowledge management and all basic

performance-related information and comparative information, as well as how such information is analyzed and used to optimize institutional performance.

5. Human resource management.
This category also known as education and training by some of the authors, which focus on human resource practices. This category is one of the most important factors for successful TQM implementation (Toreman, *et al.*, 2009; Das, *et al.*, 2008). According to Zhang, *et al.*, (200), investment in education and training is important for TQM implementation success. Employees should be regarded as valuable, long-term resources worthy of receiving education and training throughout their career. All management personnel, supervisors, and employees should accept quality education and training such as quality awareness education and quality management methods education.
This category should examine how staff development and training are aligned with the institution's objectives. It would also examine the efforts to build and maintain a climate conducive to achieving performance excellence, full participation and organizational growth. Some of the strategic thrusts of this element would be on manpower development such as staff recruitment, training and career development, staff performance and recognition and quality work environment.

6. Process and system management.
Process and system management in higher education are also the focal point within the Education Criteria for all key processes (Badri, *et al.*, 2006). In this category, built in the central requirements for efficient and effective process management: effective education design and delivery; a focus on student learning; linkage to students, stakeholders, suppliers, and partners and a focus on learning-centered processes that create value for all key stakeholders; and evaluation, continuous improvement, and organizational learning.
This category should examine the key aspects of process management, including learner-focused education design, education delivery, services and business operations. It should examine how key processes are innovatively designed, effectively managed and continuously improved. The performance results of this element would examine student performance and improvement using key measures and indicators. This category also examines the organization's support processes and operational planning with respect to financial management and planning for the continuity of operations, with the aim of improving overall operational performance.

7. Benchmarking and partnership.
The rapid changes in the market environment needed to response accordingly. In this case, institutions should compare its services and practices against peers in order to enhance performance through benchmarking. For meeting customer requirements continuously, higher education institution need to benchmark their services and processes by analyzing their leading competitors in the same industry or other industries using similar processes. Besides that, partnership also can be considered as a good practice in higher education institution. This category should examine how partnerships at various levels, internal and external could be established. Effective leadership, good education management, efficient human resource management and versatile information management would definitely help in managing dynamic relationships with internal and external stakeholders.

CONCLUSION

This study recommends that higher education institutions use these indicators for self-appraisal to measure the operating performance of each department. These indicators can be strictly designed as clear and complete as possible for checking the performance of each institution. The final result engenders a

competitive atmosphere among institutions, encourages each institution to develop a unique market niche, and improves operational efficiency. A best-performance measurement system can effectively connect institution perspective and strategies, integrate different operational targets and institution functions combined with faculty performance.

Each institution can then use this to develop its objectives and strategies that transfer to operation phrases as core of institution resources to fulfil each member's daily task, focus on its education mission and vision, apply a strategy of major breakthrough, and promote service quality because high service quality can satisfy customer requirement and overcome customer expectations.

REFERENCES

Abdullah, M.M., Jegak Uli and Tarı´, J. J. (2008); The influence of soft factors on quality improvement and performance: Perceptions from managers. *The TQM Journal*, 20(5), 436-452.

Ahmad Jusoh (2008); Hubungan Amalan Pengurusan Kualiti Menyeluruh Dengan Tahap Pemindahan Teknologi: Suatu Kajian Empirikal Mengikut Perspektif Penyelidik Universiti. Tesis PhD COB, UUM.

Anderson, M. and Sohal, A.S. (1999); A study of the relationship between quality management practices and performance in small businesses. *International Journal of Quality & Reliability Management*, 16(9), 859-877.

Antony, J., Leung, K., Knowles, G. and Gosh, S., (2002); Critical success factors of TQM implementation in Hong Kong industries. *International Journal of Quality & Reliability Management*, 19(5), 551-566.

Arumugam, V., Ooi, K.B., Fong, T.C. (2008); TQM practices and quality management performance: An investigation of their relationship using data from ISO 9001:2000 firms in Malaysia. *The TQM Magazine*, 20(6), 636-650.

Badri, M.A.,Selim, H., Alshare, K., Grandon, E.E., Younis, H. Abdulla, M. (2006); The Baldrige Education Criteria for Performance Excellence Framework: Empirical test and validation. *International Journal of Quality & Reliability Management*, 23(9), 1118-1157.

Baidoun, S. (2003); An empirical study of critical factors of TQM in Palestinian organizations, *Logistics Information Management*, 16(2), 156-171.

Barad, M. and Raz, T. (2000); Contribution of quality management tools and practices to project management performance, *International Journal of Quality & Reliability Management*, 17 (4/5), 571-583.

Brah, S. A., Tee, S. L., Rao, B.M. (2002); Relationship between TQM and performance of Singapore companies. *International Journal of Quality & Reliability Management*, 19(4), 356-379.

Calvo-Mora, A., Leal, A., and Rolda´n, J. L., (2006); Using enablers of the EFQM model to manage institutions of higher education. *Quality Assurance in Education*, 14(2), 99-122.

Crosby, Philip B. (1987); *Quality Without Tears: The Art of Hassle-Free Management*. McGraw-HiII International Editions, Singapore.

Das, A., Paul, H., and Swierczek, F. W. (2008); Developing and validating total quality management (TQM) constructs in the context of Thailand's manufacturing industry. *Benchmarking: An International Journal*, 15(1), 52-72.

Guzman, A. B. & Torres, J. R. (2004); The University of Santo Tomas Viewed from the Lens of Total Quality Management: Implications to Total Quality Education. *Asia Pacific Education Review*, 5(1), 88-99.

Deming, W. E. (1991): *The American Who Taught the Japanese About Quality*. A Fireside Book Published by Simon & Shuster, New York.

Demirbag, M., Tatoglu, E., Tekinkus, M., Zaim, S. (2006); An analysis of the relationship between TQM implementation and organizational performance: Evidence from Turkish SMEs. *Journal of Manufacturing Technology Management*, 17(6), 829-847.

Elmuti, D., Kathawala, Y., and Manippallil, M. (1996); Are total quality management programmes in higher education worth the effort? *International Journal of Quality and Reliability Management*, 13(6), 29-44.

Fco. Javier Llore´ns Montes, Antonio Verdu´ Jover and Luis Miguel Molina Ferna´ndez (2003); Factors affecting the relationship between total quality management and organizational performance. *International Journal of Quality & Reliability Management*, 20(2), 189-209.

Feigenbaum, A. V. (1986); *Total Quality Control, 3rd Edition*. McGraw-Hill Book Company, New York.

Fotopoulos, C. B. and Psomas E. L. (2009); The impact of "soft" and "hard" TQM elements on quality management results. *International Journal of Quality & Reliability Management*, 26(2), pp. 150-163.

Japanese Industrial Standard (JIS) Handbook (1987); *Quality Control*, Japanese Standards Association.

Jayamaha, N. P., Grigg, N. P, Mann R. S. (2008); Empirical validity of Baldrige criteria: New Zealand evidence. *International Journal of Quality & Reliability Management*, 25(5), pp. 477-493.

Joanna Tsang, H. Y. and Antony, J. (2001); Total quality management in UK service organisations: some key findings from a survey. *Managing Service Quality*, 11(2), 132-141.

John, S. Oakland (1989); *Total Quality Management*. Butterworth-Heinemann Ltd.

Juran J. M. (1982); *Quality Planning and Analysis. 2nd Edition*. McGraw-Hill Ins., New York.

Kanji, G. K. and A. Tambi, A. M. (1999); Total quality management in UK higher education institutions, *Total Quality Management*, 10(1), 129-153.

Kanji, G. K., Tambi, A. M. A. and Wallace, W. (1999); A comparative study of quality practices in higher education institutions in the US and Malaysia. *Total Quality Management*, 10(3), 357-371.

Lau, H.C. and Idris, M.A. (2001); The soft foundation of the critical success factors on TQM implementation in Malaysia. *The TQM Magazine*, 13(1), 51-60.

Lagrosen, S., Seyyed-Hashemi, R. and Leitner, M. (2004); Examination of the dimensions of quality in higher education. *Quality Assurance in Education*, 12(2), 61-69.

Lim, Kong Teong, and Tang, Swee Mei, (2005); Perhubungan antara Prinsip-prinsip TQM, Kepuasan Hati Staf, Kepuasan Hati Pelajar dan Pencapaian Akademik Pelajar: Satu Kerangka Konseptual. *Malaysian Journal of Learnng & Instruction*, 2. ISSN 16758110

Mann, R. and Voss, M. (2000); An innovative process improvement approach that integrates ISO 9000 with the Baldrige framework. *Benchmarking: An International Journal*, 7(2), 128-145.

Michael, R. K., and Sower, V. E., Motwani, J. (1997); A comprehensive model for implementing total quality management in higher education. *Benchmarking for Quality Management & Technology*, 4(2), 104-120.

Miyagawa, M. and Yoshida, K. (2005); An empirical study of TQM practices in Japanese-owned manufacturers in China. *International Journal of Quality & Reliability Management*, 22(6), 536-553.

Ooi, K.B., Abu Bakar, N., Arumugam, V., Vellapan L. and Loke, A.K.Y. (2007); Does TQM influence employees' job satisfaction? An empirical case analysis. *International Journal of Quality & Reliability Management*, 24(1), 62-77.

Osseo-Asare, A.E., Longbottom, D. and Murphy, W.D. (2005); Leadership best practices for sustaining quality in UK higher education from the perspective of the EFQM Excellence Model. *Quality Assurance in Education*, 13(2), 148-170.

Osseo-Asare Jr, A. E. and Longbottom, D. (2002); The need for education and training in the use of the EFQM model for quality management in UK higher education institutions. *Quality Assurance in Education*, 10(1), 26-36.

Owlia, M. S., and Aspinwall, E. M. (1998); A framework for measuring quality in engineering education. *Total Quality Management*, 9(6), 501-518.

Owlia, M. S., and Aspinwall, E. M. (1997); TQM in higher education – a review. *International Journal of Quality and Reliability Management*, 14(5), 527-543.

Robson, A., Yarrow, D. and Owen, J. (2005); Does quality drive employee satisfaction in the UK learning sector? *International Journal of Quality & Reliability Management*, 22(5), 465-484.

Sahney, S., Banwet, D.K., Karunes, S. (2008); An integrated framework of indices for quality management in education: a faculty perspective. *The TQM Journal*, 20(5), 502-519.

Sakthivel, P. B. and Raju, R. (2006); An instrument for measuring engineering education quality from students' perspective. *The Quality Management Journal*, 13(3), 23-34.

Sakthivel, P.B., Rajendran, G. and R. Raju (2005); TQM implementation and students' satisfaction of academic performance. *The TQM Magazine*, 17(6), 573-589.

Salaheldin, S.I.(2009); Critical success factors for TQM implementation and their impact on performance of SMEs. *International Journal of Productivity and Performance Management*, 58(3), 215-237.

Sharma, B. and Gadenne, D. (2002); An inter-industry comparison of quality management practices and performance. *Managing Service Quality*, 12(6), 394-404.

Sirvanci, M. B. (2004); Critical issues for TQM implementation in higher education. *The TQM Magazine*, 16(6), 382-386.

Sohail, M. S. and Hoong, T. B. (2003); TQM practices and organizational performances of SMEs in Malaysia: Some empirical observations. *Benchmarking: An International Journal*, 10(1), 37-53.

Srikanthan, G. & Dalrymple, J. F. (2002); Developing a Holistic Model for Quality in Higher Education. *Quality in Higher Education*, 8(3), 215-224.

Toremen, F., Karakus, M., Yasan, T., (2009); Total quality management practices in Turkish primary schools. *Quality Assurance in Education*, 17(1), 30-44.

Tsang, J. H. Y. and Antony, J., (2001); Total quality management in UK service organisations: some key findings from a survey. *Managing Service Quality*, 11(2), 132-141.

Venkatraman, S. (2007); A framework for implementing TQM in higher education programs. *Quality Assurance in Education*, 15(1), 92-112.

Win, B. A., and Cameron, K. S. (1998); Organizational quality: An examination of the Malcolm Baldrige National Quality framework. *Research in Higher Education*, 39(5), 491-512.

Zaini Abdullah and Rushami Zien Yusoff (2004); Multi-Source Assessment - A Total Quality Management Driven Performance Appraisal System: The Issue of Fairness. *Malaysian Management Journal*, 8(1), 55-67.

Zhang, Z., Waszink, A., and Wijngaard, J. (2000); An instrument for measuring TQM implementation for Chinese manufacturing companies. *International Journal of Quality &Reliability Management*, 17(7), 730-755.